



DECEMBER MEETING EMBEDDING A MICROPROCESSOR INSIDE AN FPGA

DATE: Thursday, December 8, 2005

PLACE : Raffel's – 10160 Reading Road (see below for directions)

TIME : 5:30 p.m. to 7:00 p.m. - Social Time/Dinner
7:00 p.m. to 8:30 p.m. - Program

COST FOR DINNER: \$10.00 for Student Members
\$15.00 for Members
\$20.00 for Non-Members

NOTE: DINNERS ARE ALWAYS OPTIONAL - YOU MAY ATTEND THE PROGRAM ONLY.

MENU SELECTIONS: Roasted Turkey & Dressing, Baked Ham with Pineapples, Chicken Ala King, Sweet Potato Casserole, Scalloped Potatoes, Seasoned Green Beans, Tossed Salad, Dinner Rolls and Butter, Assorted Holiday Pies, Coffee, Tea Iced Tea, Soft Drinks. There is also a bar available for the purchase of alcoholic drinks. Raffel's is located at 10160 Reading Road, south of Glendale-Milford Road on the east side of Reading. Take I-75 to the Glendale-Milford Rd. Exit, go east on Glendale-Milford Road approximately 3/4 of a mile to Reading Rd. and turn right on Reading.

The Section Meetings provide a great opportunity to network with fellow engineers in the area!!!

Please call the Cincinnati Section Voice Mailbox at **513-629-9380**, by **Noon, Tuesday, December 6, 2005** if you plan to attend. Please leave your Name, IEEE Member Number, and a daytime telephone number. You can also make a reservation by e-mailing our Arrangements Chair, Charlie Nash, at cnash@ieee.org.

ABOUT THE MEETING: At month's meeting, Brian Avsec of Altera Corp. will present the Nios® II soft-core processor that enables you to choose your own set of peripherals, tradeoff cost and performance, avoid processor obsolescence, and accelerate your design time. A demonstration will follow showing how to build a system in minutes and accelerate your software over 100x. The presentation will cover:

- Decrease system cost, complexity, and power consumption by integrating processors, peripherals, memory, and I/O interfaces on a single FPGA
- Boost software performance with hardware acceleration
- Extend your product's market competitiveness, adding new features with in-field upgrades

- Nios® II integrated development environment (IDE) – a full-featured software development suite based on the Eclipse IDE project
- Free evaluation

Brian Avsec is a Field Applications Engineer with Altera Corp. for the past 11 years and has worked on 1000's of development projects in the Midwest. He has been part of the transition of Programmable Logic from a simple logic device with a few hundred gates to the main system component with millions of gates.

UPCOMING CINCINNATI SECTION MEETING TOPICS

In the coming months, our Section Meetings will feature the following topics:

January 26, 2006	Continuing Professional Development requirements for PEs
February, 2006	ESC Awards Banquet

We hope to see you there!!!

CHAIR'S MESSAGE

by Jim Everly, Section Chair

Last month's meeting on Freescale Semiconductor's ZigBee Technology was well attended. I found the topic very interesting and I was pleased to see several new faces at the section meeting. This month's meeting should also be well attended.

As a result of Sections Congress 2005, I have included the top three items to be addressed by IEEE over the next three years:

- 1.) Increase IEEE membership value. Include as part of the membership fee limited access to on-line publications, products and services or one free society membership with increased benefits according to membership grade, volunteer contributions, and years of membership.
- 2.) Develop web-based interactive seminars, downloadable and on-line presentations on technical subjects including and exam which, when completed, will provide CEU/PDH credit for participants. The seminars are to be available to IEEE members at a minimum cost. The presentation should be made available at no cost to student members, unemployed members, life members, and for use at section meetings. Fifty CEU awardable tutorials should be available by the end of the third quarter of 2006.
- 3.) Provide incentives to companies encouraging employer involvement in the IEEE. The IEEE should reach out to companies showing the value of IEEE membership.

Just a reminder, the Cincinnati Section is recruiting members to be upgraded to Senior Member. We processed three applications last month and this could be your month to elevate your membership. The application process is easy if you have an up-to-date resume. If you are interested in elevating your IEEE membership to Senior Member, be sure to attend December's meeting. After the technical presentation, I will hold an informal session on how to prepare a senior member application.

MEMBERSHIP NEWS

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

Tyler J. Agypt	Prasanna B. Matala
Daniel Anderson	Brent A. McAlister
Asitha U. Bandaranayake	Joseph P. Moreland
Lauren R. Bennett	Michael D. O'Brian
Jacob A. Berlier	Brook Patten
Mike Borowczak	Barton J. Sauer
Landon Cole	Gregory J. Shannon
Daniel R. Elpers	Giridhar Tatavarty
Norman D. Fulton	Haitang Wang
Nnamdi C. Ifeanyi	Bradley J. White
P. Jakatdar	Yanli Yang
Mehdi Kamalian	(Julie) Yuhua Zhao
Gary Lewandowski	Linn L. Zimmer

We wish to welcome these new members to our Section!!!

IEEE 2005 CINCINNATI SECTION BALLOT

Election of Officers for Term Beginning 1/1/06 and Ending 12/31/07

MEMBER-AT-LARGE

☐ Brian J. Resnick ☐ Write-In _____

Résumé of Candidate

RANDY C. RESTLE - Currently a Senior Manager of Digital Engineering with Harris Corporation and an Adjunct Professor at the University of Cincinnati College of Engineering. At Harris, his responsibilities include managing development projects. He has introduced product development process improvements including quantification of development costs, product features, time to market and product cost trade-offs into the business justification models. At UC, he teaches digital signal processing to senior and graduate students. Randy holds three patents and is a licensed PE in the State of Ohio and a Certified Project Management Professional. BSEE, MSEE and MBA from the University of Cincinnati.

Return the completed ballot to Bob Morrison (Newsletter Editor) by **DECEMBER 17, 2005**
either by e-mail to j.r.morrison@ieee.org or via regular mail to:

J. R. Morrison
4472 Oakville Drive
Cincinnati, Ohio 45211

Member Name: _____

Member Number: _____

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Dick Reiman, Historian

Copyright 1994 IEEE. Reprinted with permission from the IEEE publication, "Scanning the Past" which covers a reprint of an article appearing in the Proceedings of the IEEE Vol. 82, No.1, January 1994.

Vladimir K. Zworykin

Sixty years ago this month, the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) included a paper on the iconoscope, described as part of an all-electronic television system being developed at the Radio Corporation of America (RCA). The author of the January 1934 paper was Vladimir K. Zworykin, a Russian immigrant and a prolific inventor, who received the Morris N. Liebmann Memorial Award from the IRE in 1934 for his contributions to television. He was later to receive the IRE Medal of Honor in 1951 and the IRE established the annual Vladimir K. Zworykin Award in his honor in 1950 (continued by the IEEE to the present).

In his 1934 paper, Zworykin reported that the recently developed iconoscope replaced mechanical scanning apparatus and was far more sensitive than the older system. He explained that the iconoscope used a photo-sensitive mosaic where each element of the mosaic behaved as a "miniature photo-electric cell." Mosaic elements became charged by exposure to light and were subsequently scanned by a cathode ray beam to produce modulation of the television transmitter. Zworykin concluded that the iconoscope offered "new prospects" for achieving "high grade television transmission. "

Zworykin was born in Mourom, Russia, in 1889 and graduated in electrical engineering from the Petrograd Institute of Technology in 1912. At Petrograd he studied under Boris Rosing who already was experimenting with a mechanical-scan television. Zworykin continued his education at the College de France in Paris from 1912 to 1914, where he investigated X-rays working under the eminent physicist Paul Langevin. During the first World War, Zworykin served as an officer in the Radio Corps of the Russian Army.

In 1919, Zworykin came to the United States, where he joined the Westinghouse Research Laboratory in Pittsburgh, PA. He also enrolled as a graduate student at the University of Pittsburgh where he received the Ph.D. degree in 1926. At Westinghouse, he carried out research on photoelectricity and vacuum tubes as well as television and facsimile. He published his first IRE paper in March 1929 on a facsimile system which he described as capable of transmitting good quality pictures or written messages at a rate of 630 words per minute. He was coauthor of a book entitled Photocells and Their Application published in 1931.

In 1929, Zworykin moved from Westinghouse to RCA where he became research director of an electronics laboratory in Camden, NJ. RCA encouraged him to continue his work on television. He conducted tests during 1931-1932 which he disclosed in a December 1933 IRE paper. The contents of the paper indicated that he was still using a mechanical scanning transmitter along with a cathode-ray tube as a picture tube. Field tests of the iconoscope were carried out at the Camden laboratory during 1933-1934, using a 343-line picture transmitted at 30 frames per second. He later worked on a more sensitive image orthicon camera tube which combined features of the iconoscope and the image dissector tube of Philo T. Farnsworth.

Zworykin and his RCA colleagues also developed electron microscopes and infrared detectors which were used in World War II sniperscopes. He was coauthor of the book entitled Television: The Electronics of Image Transmission published in 1940. He was associate research director of RCA Laboratories from 1942 to 1945 and a vice president at RCA from 1947 until his retirement in 1954. He received the Lamme Medal of the American Institute of Electrical Engineers (AIEE) in 1948 and the Edison Medal from the IAEE in 1952. He was elected to both the National Academy of Sciences and the National Academy of Engineering and received

the National Medal of Science in 1966. After retiring from RCA he worked as a director of a medical research laboratory at the Rockefeller Institute for several years. He received approximately 120 U.S. patents and was elected to the National Inventors Hall of Fame in 1977. He was a dedicated bird hunter and had many non-technical interests, including music and art. He died at Princeton, NJ, in July 1982.

*James E. Brittain
School of History, Technology, and Society
Georgia Institute of Technology*

IEEE NEWS

United States Seen Lagging Behind in Developing “New Internet:”

IEEE-USA Today’s Engineer Online Article

WASHINGTON (14 October 2005)-- Although the Internet was created and developed in the United States, the country is lagging behind in developing the “New Internet,” according to an October article in IEEE-USA Today’s Engineer Online.

This “New Internet” is expected to depend upon Internet Protocol Version 6, or IPv6, which is replacing the nearly 20-year-old Internet Protocol Version 4 (IPv4). But leadership of this enhanced, next-generation Internet is in Asia and Europe. The economic consequences could be dire for the United States, according to Today’s Engineer.

“The New Internet has the potential to create 10 million new American jobs and trillions of dollars in revenue for the United States,” Alex Lightman, chair of the upcoming United States IPv6 Summit, told Today’s Engineer, “but leadership is slipping away to other countries, and it will soon be difficult, if not impossible to recover.”

Experts say that perhaps IPv6’s greatest advantage over IPv4 is in the vast increase in available Internet addresses, or unique numbers assigned to each machine on the Internet. More addresses are needed to support future Internet-dependent computer growth in homes, businesses, cars and mobile devices such as cell phones and PDAs (personal digital assistants). With IPv6, trillions of times more addresses will be available worldwide.

IPv6 proponents also say the protocol offers improvements in routing and network autoconfiguration, is compatible with 3G wireless (near) broadband, supports greater mobility and offers enhanced system security.

IEEE-USA Urges Senate Committee Not to Increase H-1B Visas

WASHINGTON (19 October 2005) -- The Senate Judiciary Committee should not vote to release 300,000 additional H-1B visas, IEEE-USA President Gerard A. Alphonse wrote in a letter to the committee today.

“We urge you not to make a bad situation worse by approving another increase in H-1B admissions ceilings,” Alphonse wrote.

The Senate committee is expected Thursday to discuss a proposal that would allow as many as 60,000 additional H-1B visas to be issued in any of five fiscal years in which the current cap of 65,000 is reached. By imposing an extra \$500 fee on the new visa, the proposal is expected to raise up to \$30 million a year. The proceeds would help meet budget reconciliation targets, not improve the H-1B program. IEEE-USA supports a House Judiciary Committee proposal to raise revenue by increasing fees on L-1 visa applications.

IEEE-USA has long held that permanent immigration is a better solution to assist U.S. companies in their search for talented foreign high-tech workers such as engineers and scientists. H-1B visas are temporary (three to six years).

Alphonse also cited a recent Department of Homeland Security (DHS) Inspector General's report confirming that DHS does not have a process in place to stop issuing H-1B visas once the congressionally mandated ceiling of 65,000 has been reached. Sen. Charles Grassley (R-Iowa) and Rep. John Hostettler (R-Ind.) learned that DHS' Citizenship and Immigration Services (CIS) might have violated federal law by approving more than 72,000 H-1B visa petitions for FY 2005.

"It boggles my mind that with our computer technology, CIS can't count to 65,000," Grassley said in an 18 October news release. "Bureaucrats are playing a guessing game, and show no shame. Congress put these restrictions in place to help American workers, and we expect them to be followed."

A copy of the Inspector General's report is available at <http://grassley.senate.gov/releases/2005/10182005.pdf>.

IEEE's "The Institute" On-Line

The updated issue of IEEE's "The Institute" is always available on-line at <http://www.ieee.org/theinstitute>. Check out some of these items which are featured:

- Life Fellow Brought the IEEE to Peru: As a bright, up-and-coming engineer back in 1967, IEEE Life Fellow Jose F. Valdez C. had never heard of the institute. In the 38 years since then, he founded the IEEE Peru Section, served as its president twice, and worked to build up membership from a mere 86 members at the section's birth to 649 members today. Find out more at <http://boldfish.ieee.org:80/u/1055/04824637>
- Boy Scouts Earn EE Merit Badges: Thanks to a group of IEEE volunteers, several hundred Boy Scouts learned the basics of electricity and electronics while earning electronics merit badges at the 2005 National Scout Jamboree in Virginia. Scouts learned about electrical safety, simple circuits, and -- the most popular topic -- microprocessors. Read more at <http://boldfish.ieee.org:80/u/1056/04824637>
- Charitable Funds Need Your Support: For more than 60 years, Addison D. Cole has never let his membership lapse. He says he values the work of the IEEE, especially in the development of industry standards and the advancement of the engineering profession. You can support the good work of the IEEE, as Cole does, by making a donation to one of eight charitable funds listed on your renewal notice. Read more at <http://boldfish.ieee.org:80/u/1057/04824637>
- Four Programs Funded by IEEE Foundation: The IEEE Foundation's Board of Directors awarded US \$73,254 to projects supporting precollege teachers, engineering history, public awareness of technology, and student membership. Find out more at <http://boldfish.ieee.org:80/u/1059/04824637>
- IEEE Cosponsors Standards Paper Contest: The International Electrotechnical Commission (IEC), in partnership with the IEEE, other societies, and The Economist magazine, have launched the IEC Centenary Challenge, a competition for papers on the economic and social impact of international standards on business. The top prize is US \$15,000. Anyone affiliated with an academic institution, including faculty members, heads of faculty, and teaching or research staff, may enter a paper. Registration to enter the contest opens today and runs until 3 March 2006. For registration forms, rules, and further information visit <http://boldfish.ieee.org:80/u/1060/04824637>

- Simulation Conference Deals With Many Realities: An accurate simulation is a rehearsal for reality, all conceivable realities, and maybe a few you might not have conceived without a simulator's help. The Winter Simulation Conference, to be held from 4 to 7 December in Orlando, Fla., aims to help technologists predict the operation, and inherent pitfalls, of all manner of systems. Read more at <http://boldfish.ieee.org:80/u/1063/04824637>
- New Proceedings Addresses Circuits and Systems: The Proceedings of the 2005 IEEE International Symposium on Circuits and Systems is now available. Held in Kobe, Japan, in May, the symposium focused on circuits and systems that have improved the quality of life and consumer technology, including mobile communications, multimedia systems, sensor interfaces, and biosystems. To purchase the complete conference proceedings from ShopIEEE, visit <http://boldfish.ieee.org:80/u/1064/04824637>
- Jamieson Is Next IEEE President-Elect: IEEE Fellow Leah Jamieson has been selected the 2006 IEEE President-Elect by members of the IEEE. She will begin serving as IEEE President on 1 January 2007 pending acceptance of the Teller's Committee election-tally report by the IEEE Board of Directors in mid-November. Jamieson is a professor of electrical and computer engineering at Purdue University in West Lafayette, Ind., where she has been a faculty member since 1976. She also is the vice president of IEEE Publication Services and Products. For other election results, visit <http://boldfish.ieee.org:80/u/1102/04824637>
- Members Share Their Hurricane Survival Stories: With more than 5000 IEEE members living in the areas affected by the pair of hurricanes that struck the U.S. Gulf Coast states in August and September, it comes as no surprise that some had tales to tell The Institute of survival and also of aid they were able to provide. Read more at <http://boldfish.ieee.org:80/u/1103/04824637>
- How Much Are You Worth? Let's say you'd like to find out what salary you can command in today's U.S. electrotechnology job market. You can get a rough idea by talking to colleagues and doing some research online. But wouldn't you rather get a more precise picture of your market value? The IEEE-USA Salary Service offers IEEE members estimates of base pay as well as actual income for a wide range of technical fields and geographic areas within the United States. Read more at <http://boldfish.ieee.org:80/u/1104/04824637>
- Marketplace of Ideas: Jobs Today, None Tomorrow: Today, many engineers are having trouble finding good jobs in their fields because of layoffs, technical obsolescence, and declining job markets. Is it fair for professional associations such as the IEEE to encourage young people to pursue engineering careers? Weigh in at institute@ieee.org
- History Center Celebrates Quarter Century: Celebrating its 25th anniversary this year, the IEEE History Center has come a long way since it started in 1980 in a one-person, one-room office. Find out more at <http://boldfish.ieee.org:80/u/1106/04824637>
- Lakehead Students Win Canadian Design Competition: The new IEEE Canada Telus Innovation Award went to three students from Lakehead University in Thunder Bay, Ont., Canada, for their design of a stabilization device for a wheeled robot. The project won them Can \$10 000 (approximately US \$8478) from IEEE's Region 7 (Canada) and Telus, Canada's second largest telecommunications company, which sponsored what will become an annual award. Find out more at <http://boldfish.ieee.org:80/u/1107/04824637>
- Register for Online Seminar on Networking: The IEEE and the Graduates of the Last Decade group, better known as GOLD, are holding a free one-hour Internet seminar about networking on 16 December

at 10 a.m. EST (15:00 GMT). The seminar will focus on the skills necessary to develop successful networking relationships that will help build your career. The speaker will be Karen Susman, networking expert and author of four books including "102 Top Dog Networking Secrets." Visit <http://boldfish.ieee.org:80/u/1109/04824637> and click on the seminar link to register. Questions about the seminar should be sent to gold@ieee.org

- Nomination Deadline Extended for EE Times ACE Awards: The new entry deadline is 25 November for EE Times' Second Annual ACE Awards. The awards, cosponsored by IEEE Spectrum, honor the people, companies, and products that demonstrate leadership and make positive contributions to society. To complete a nomination or for more details, visit <http://boldfish.ieee.org:80/u/1110/04824637>

IEEE-USA Seeks EWeek "New Faces of Engineering" Nominees

WASHINGTON (27 October 2005) -- IEEE-USA is now accepting nominations for the Engineers Week (EWeek) "New Faces of Engineering" recognition program. U.S. and international IEEE members are eligible.

The "New Faces of Engineering" program strives to promote the accomplishments of young engineers by highlighting their engineering contributions and impact on society. The campaign is designed to enhance and improve the image of engineers. Nominees must be 30 or younger, have an engineering degree from a recognized educational institution and be IEEE members.

To nominate someone, go to http://www.eweek.org/site/Engineers/newfaces2006/2006_nomination.doc and fill out the form. Send completed forms to Helen Hall at h.hall@ieee.org, or by fax at 202-785-0835. Go to <http://www.eweek.org/site/Engineers/newfaces2006/nomination.shtml> for more information.

Nominations are due 14 November.

Five IEEE members, including two from outside the United States, will be chosen by an ad hoc committee to represent the IEEE and will be featured on the EWeek Web site (www.eweek.org). The top nominee from each EWeek sponsoring society will appear in USA Today during EWeek 2006, 19-25 February. You can view last year's honorees at <http://www.eweek.org/site/Engineers/newfaces2005/index.shtml>.

IEEE-USA Urges Congress to Extend R&D Credit

WASHINGTON (27 October 2005) -- IEEE-USA joined with the Information Technology Association of America, the American Electronics Association, the Electronic Industries Alliance and others in urging Congress to extend and strengthen the Research and Experimentation Tax Credit (R&D credit) before it expires on 31 December.

The 21 October letter (<http://www.ita.org/taxfinance/docs/RDHighTechfinal.pdf>) was sent to Senate Finance Committee Chairman Charles Grassley (R-Iowa) and Ranking Member Max Baucus (D-Mont.); and House Ways and Means Committee Chairman Bill Thomas (R-Calif.) and Ranking Member Charles Rangel (D-N.Y.). It endorses bills pending before the Senate (S. 627) and House (H.R. 1736) that would significantly strengthen the current R&D credit.

The credit allows companies to devote more money to research and development than they would otherwise. As noted in the letter, R&D contributes many positive economic benefits to the United States, including "increased revenue streams to U.S. companies that enhance their ability to hire employees, purchase capital goods, pay dividends to shareholders and contribute to a strong U.S. tax base."

**U.S. IEEE Student Members Encouraged to Apply for
IEEE-USA Mass Media Fellowships**

WASHINGTON (4 November 2005) -- IEEE-USA is for the first time seeking two U.S. IEEE student members to work as reporters, researchers and production assistants in newsrooms across the country by serving a 10-week mass media fellowship in the summer of 2006.

Administered by the AAAS in Washington, D.C., mass media fellows must have the ability to explain complex scientific and engineering principles in a way the general public can understand. The program helps strengthen connections between engineers and journalists, as well as increase public understanding and awareness of science, engineering and technology.

Applicants must at least be a senior in college majoring in a technical field, mathematics or social sciences. Mass Media Fellows receive a weekly stipend of \$450. Applications are due no later than 15 January 2006. For more information and an application go to <http://www.aaas.org/programs/education/MassMedia/>; or contact Stacey Pasco, at spasco@aaas.org, tel. 1-202-326-6441.

In 2005, AAAS Mass Media Fellows produced some 250 news stories on science and technology. Abby Vogel, a graduate student at the University of Maryland, served as IEEE-USA's 2005 Mass Media Fellow. Vogel worked for the Richmond (Va.) Times-Dispatch, and wrote articles on West Virginia wind farms and making shuttles safer. She also placed several articles on the front page of the paper. For more on IEEE-USA's participation in this program, go to <http://www.ieeeusa.org/communications/massmedia.asp>

The IEEE Cincinnati Section Executive Committee
Member Names and Phone Numbers

Cincinnati Section Voice Mail	513-629-9380 (call for meeting reservations)
Section Web Page	http://ieee.cincinnati.fuse.net/
Jim Everly - Chair	513-777-7129, j.everly@ieee.org (E-mail)
Steve Olenick - Vice Chair	513-554-2059 (Office), 513-642-3220 (Fax), steveo@nsseng.com (E-mail)
Laurie Tappel - Treasurer	513-397-6383, laurie.tappel@cinbell.com (E-mail)
Ron Harbaugh - Secretary	513-769-3781, ron.harbaugh@ieee.org (E-mail)
Brian J. Resnick - Member-At-Large & PACE Chair	513-556-4244 (Office), 513-759-5367 (Fax), Brian.Resnick@ieee.org (E-mail)
Randy Restle - Member-At-Large	rrestle@ieee.org (E-mail)
Charlie Nash - Arrangements Chair	513-723-3849, cnash@ieee.org (E-mail)
Randy Holt - Membership	859-572-5710 (Office), Holthr@nku.edu (E-mail)
Bob Morrison - Editor	513-287-3697 (Office), 513-287-4155 (Fax), j.r.morrison@ieee.org (E-mail)